

invention may be comprised of any material. Included among the possible materials are a metal, any metal chalcogenide, a metal oxide, a metal sulfide, a metal selenide, a metal telluride, a metal alloy, a metal nitride, a metal phosphide, a metal antimonide, a semiconductor, a semi-metal, any organic compound or material, any inorganic compound or material, a particulate layer of material or a composite material. The segments of the particles of the present invention may be comprised of polymeric materials, crystalline or non-crystalline materials, amorphous materials or glasses. In certain preferred embodiments of the invention, the particles are "functionalized" (e.g., have their surface coated with IgG antibody). Commonly, such functionalization may be attached on selected or all segments, on the body or one or both tips of the particle. The functionalization may actually coat segments or the entire particle. Such functionalization may include organic compounds, such as an antibody, an antibody fragment, or an oligonucleotide, inorganic compounds, and combinations thereof. Such functionalization may also be a detectable tag or comprise a species that will bind a detectable tag.

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The present invention is directed to the manufacture of freestanding nanobar codes. By "freestanding" it is meant that nanobar codes that are produced by some form of deposition or growth within a template have been released from the template. Such nanobar codes are typically freely dispensable in a liquid and not permanently associated with a stationary phase. Nanobar codes that are not produced by some form of deposition or growth within a template (e.g., self-assembled nanobar codes) may be considered freestanding even though they have not been released from a template. The term "freestanding" does not imply that such nanoparticles must be in solution (although they may be) or that the nanobar codes can not be bound to, incorporated in, or a part of a macro structure. Indeed, certain embodiments of the invention, the nanoparticles may be dispersed in a solution, e.g., paint, or incorporated within a polymeric composition.

In the claims:

Replace the claims of record **1, 5, and 8** with the amended versions below. A marked-up version of the amended claim is provided on separate sheets following the remarks.